

FUEL SYSTEM COMPATIBILITY**Application**

This test method describes the procedures required to evaluate the permeability and compatibility of materials such as metals, elastomers, and polymers used in fuel systems to various fuel blends such as ASTM Reference Fuel C, methanol, auto-oxidized fuels, etc.

Apparatus Required**HDPE Bottles with Screw Caps****Test Tubes**

200 mL capacity with 34/45 ground glass joints.

Water Jacketed Condensers**Heaters**

Oil baths, or aluminum aging blocks, all with appropriate temperature controllers. For temperatures above 60°C, aging containers such as parr reaction vessels should be used.

Ovens

The aging ovens for dryout should be class 'A' type with fuel handling capability.

Circulating Hot Water Bath

Bath must be capable of maintaining a temperature of 60°C.

Materials Required**Samples**

As appropriate for the desired material, property under evaluation, and/or as specified by the engineering document.

Date	Action	Revisions
2001 04 30	Revised	Editorial – no technical change A. Cockman
2000 03 09	Revised	Revised Method B, Updated A. Reaume
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Method A - Metal Corrosion

Setup Fuel Blend: As specified in FLTM AZ 105-02
 Temperature: 60° +/- 2°C
 Time: 6 months

Sample Preparation

Scribe all coupons to the substrate with an "X" on the top and bottom.

Stamp one end of each coupon with an identifying number. The stamped end is considered the top of the coupon.

Label the test bottles or screw-caps using the IDs stamped on the coupons, or any other identification that will assure that samples and bottles do not get mixed up.

Extra samples of each material should be kept untested for comparison purposes and post test evaluations if necessary.

Test Procedure

Conduct all testing in a properly ventilated area.

Be sure to agitate the fuel mixture storage container just prior to filling each bottle; very rapid phase separations occur with some of the fuel/methanol blends.

Test two samples per fuel (2 samples each per 7 fuels - 14 samples total).

Place one coupon in the corresponding polyethylene (HDPE) bottle so that the stamped end is at the top. Fill with the appropriate test fuel until half the sample is covered with fuel. During the test, this will assure that the sample will be subjected to liquid fuel on the bottom half and vapor on the top half. Repeat this step for the remaining samples and fuels.

Tighten the screw-on polypropylene caps and retighten the next day after reaching soak temperature to assure the best possible seal.

Place all bottles in the circulating hot water bath set at 60°C. Use a separating mechanism and a heavy top to keep the bottles from floating.

Inspect the coupons every two weeks. Record detailed notes of the findings at each inspection. (See evaluation details below.)